March 3, 2014

Mr. Dwight Leisle
Port of Portland
7200 NE Airport Way
Portland, Oregon 97218

Re: Proposed Surface Soil Sampling – Remedial Design
Willamette Cove Upland Facility
Portland, Oregon
ECSI No. 271
1056-03

Dear Mr. Leisle:

This letter presents the proposed surface soil sampling activities to support the preparation of the Remedial Design for the Willamette Cove Upland Facility (the Facility; Figures 1 and 2) in the St. Johns area of Portland, Oregon. Work at the Facility is being conducted under Voluntary Agreement EC-NWR-00-26 between the Port of Portland (Port), Metro, and the Oregon Department of Environmental Quality (DEQ). The proposed activities presented in this letter include collection of surface soil samples for chemical analysis.

BACKGROUND

Residual Risk Assessment documents (RRAs) for the Facility are under review by DEQ. Unacceptable risks were identified in the risk assessments and consequently a Feasibility Study (FS) was prepared (document under review by DEQ). A remedial action design (hot spot removal) is under preparation. Apex Companies, LLC (Apex) recommends additional soil sampling to better define the lateral extent of the removal action areas and to profile soil for waste designation.

PROPOSED SAMPLING ACTIVITIES

Preparatory Activities

The following activities and schedule coordination will be completed in preparation for the field work.

- **Health and Safety Plan (HASP).** Apex Companies, LLC (Apex) will update the HASP for its personnel involved with the project.
- **Coordination of Facility Access.** The work activities will be conducted in coordination with Metro.

Surface Soil Sampling

Six areas have been proposed for the removal action (Figure 3). Surface soil samples will be collected at Areas 1 through 6 as shown on Figures 3 through 7.

At Areas 1, 2, 3, 4, and 6, surface soil samples will be collected from the top 6 inches of surface soil (after removing vegetation) using a 0.5 inch diameter cylindrical stainless steel sampler. Multiple aliquots will be collected at each location (within a 5-foot radius) in order to collect sufficient volume for analysis. Area 5 is in a location of an historical removal action (Figure 6). The surface material is imported clean fill that will not be sampled. At Area 5, soil samples will be collected from 0.5 to 1.0 and 1.0 to 1.5 feet below the ground surface (bgs) with a hand auger. The hand auger locations will be backfilled with hydrated bentonite chips in accordance with Oregon Water Resources Department (OWRD) requirements.

The soil samples will be collected in accordance with Standard Operating Procedure (SOP) 2.2 (Attachment A). Field screening will not be completed based on the Contaminants of Concern (COCs) being evaluated.

CHEMICAL ANALYSES

The soil samples will be submitted to Apex Labs in Tigard, Oregon for chemical analyses on a normal turnaround basis for the following:

Area	Primary Analytical Method	TCLP (number)
1	Mercury by EPA Method 7471	RCRA 8 (1)
2	PAHs by EPA Method 8270M-SIM	RCRA 8 (1)
3	Lead/Mercury by EPA 6010/7471	RCRA 8 (2)
4	Copper by EPA 6010	RCRA 8 (1)
5	Mercury by EPA Method 7471	RCRA 8 (1)
6	Copper/Zinc/Mercury by EPA 6010/7471	RCRA 8 (2)

These analyses correspond with the COCs that exceeded the hot spot level in the Feasibility Study (FS). The requested method reporting limits (MRLs) will be consistent with the historical laboratory analyses and the concentrations will be presented to the method detection limit (MDL).

As noted in the table above, one or two five-point composite samples will be collected and submitted for characteristic hazardous waste determination using the Toxicity Characteristic Leaching Procedure (TCLP) extract (EPA Method 1311/1312) followed by analysis for metals with characteristic hazardous waste regulatory levels (RCRA 8 metals [arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver]) using EPA 6000/7000 series methods.

The results of the incremental soil sampling suggest that hot spots of mercury may not be fully defined on the Central Parcel. Consequently, the samples from Areas 2 and 4 will also be analyzed for mercury.

Location Control. The sample locations will be established using a high-accuracy, handheld global positioning system (GPS) device (Trimble© GeoXH™).

REPORTING

The results of the sampling proposed in this letter will be incorporated in the Remedial Design and will be used for waste profiling at the time of the work.

If you have any questions regarding these activities, please contact the undersigned at (503) 924-4704.

Sincerely,

expires 12/31/2014

Michael J. Pickering, R.G.
Senior Associate Hydrogeologist

ATTACHMENTS

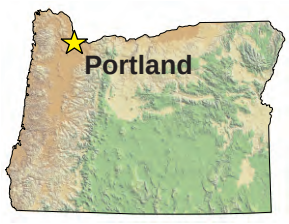
Figure 1 – Facility Location Map
Figure 2 – Upland Facility Plan
Figure 3 – Proposed Sampling Areas
Figure 4 – Sampling Plan – Area 1 and Area 2
Figure 5 – Sampling Plan – Area 3
Figure 6 – Sampling Plan – Area 4 and Area 5
Figure 7 – Sampling Plan – Area 6

Attachment A – Standard Operating Procedure 2.2

Note: Base map prepared from USGS 7.5-minute quadrangles of Linnton and Portland, OR, dated 2011 as provided by USGS.gov.

0 2,000 4,000

Approximate Scale in Feet



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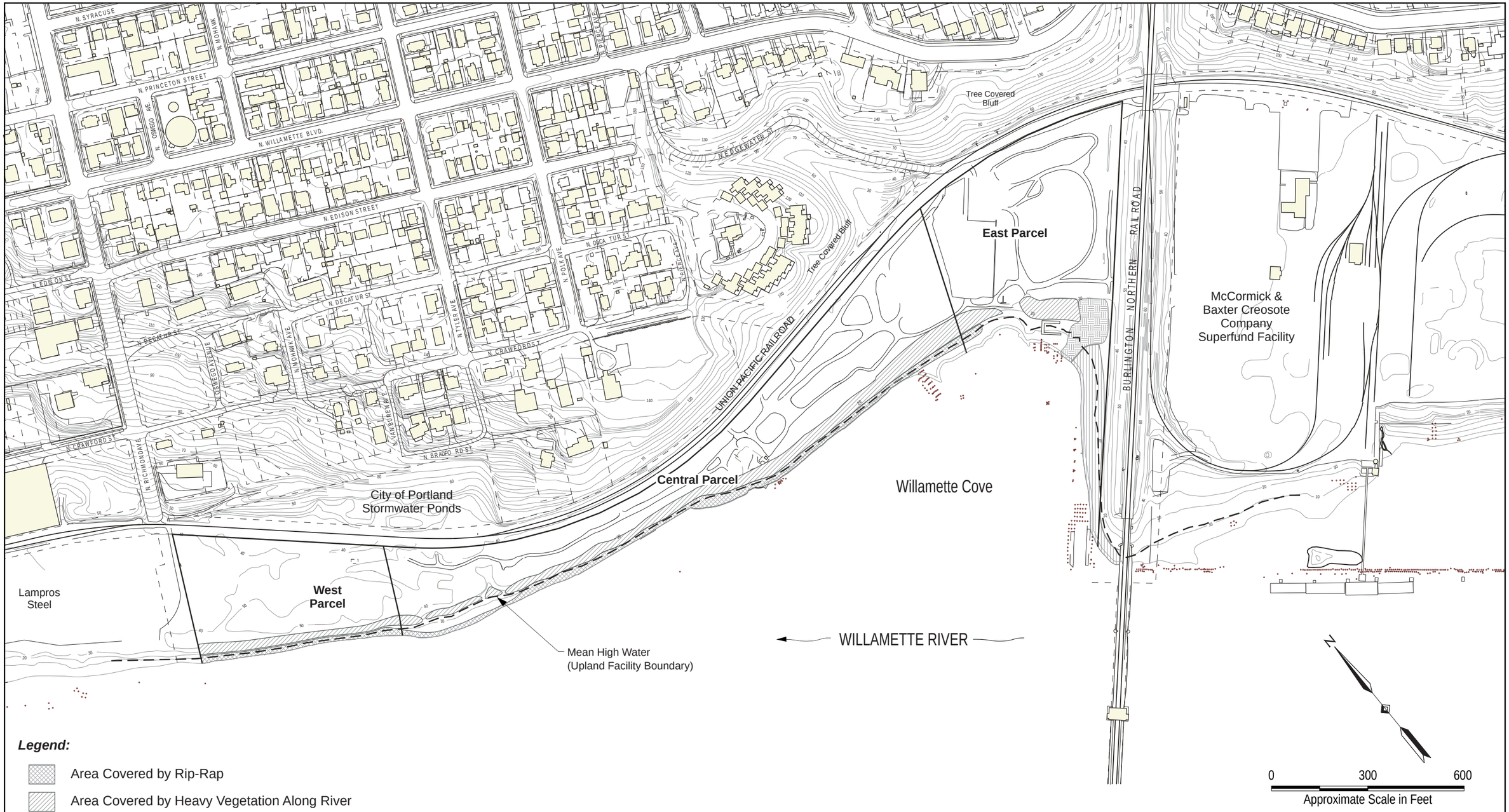
Facility Location Map

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1056-03	Figure
February 2014		1



Legend:

- Area Covered by Rip-Rap
- Area Covered by Heavy Vegetation Along River
- Area Covered by Clean Imported Sand
- Area of Armored Sediment Cap

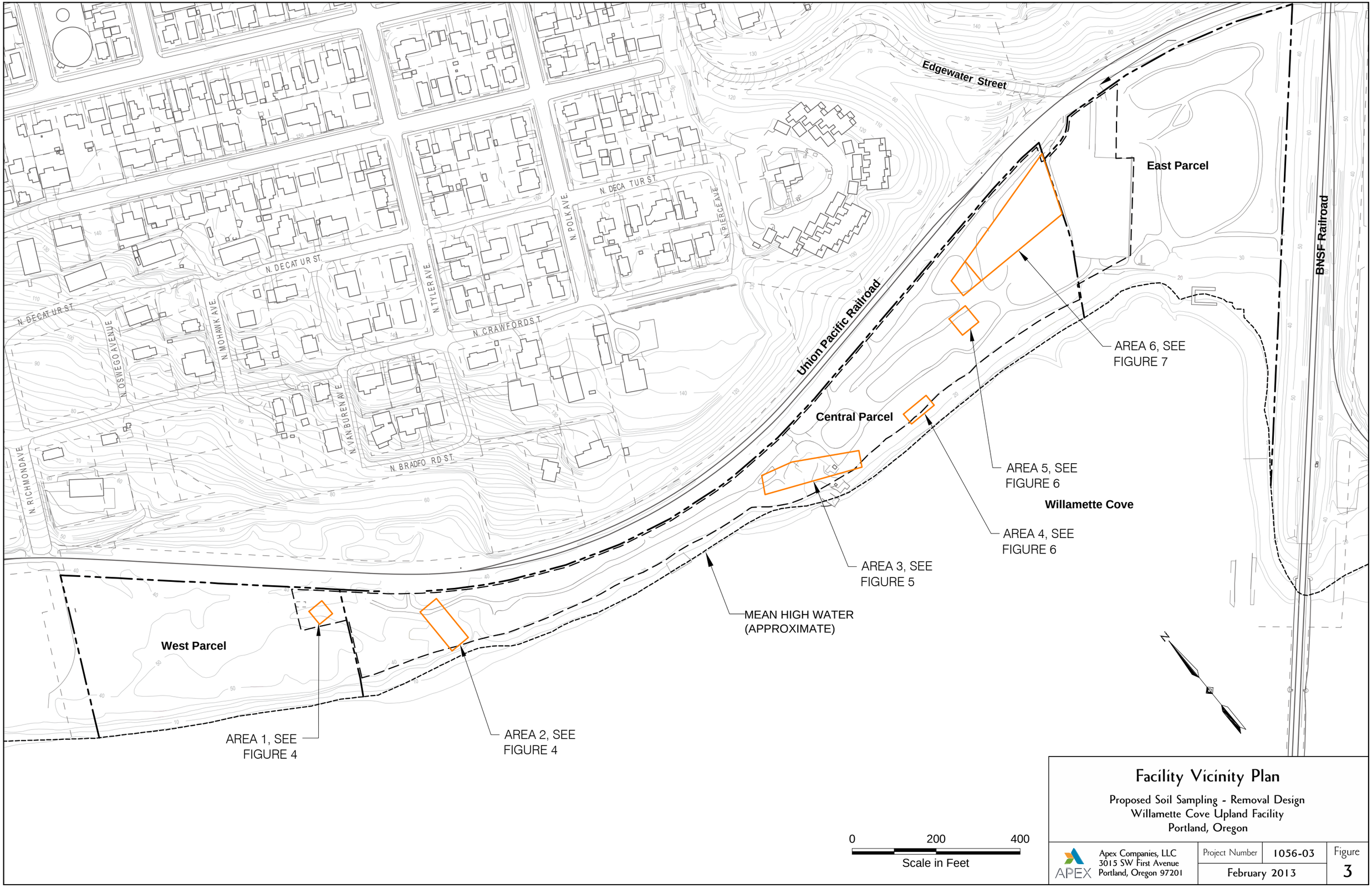
Note: Base map prepared from an electronic file provided by Hart Crowser.

Facility Plan

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

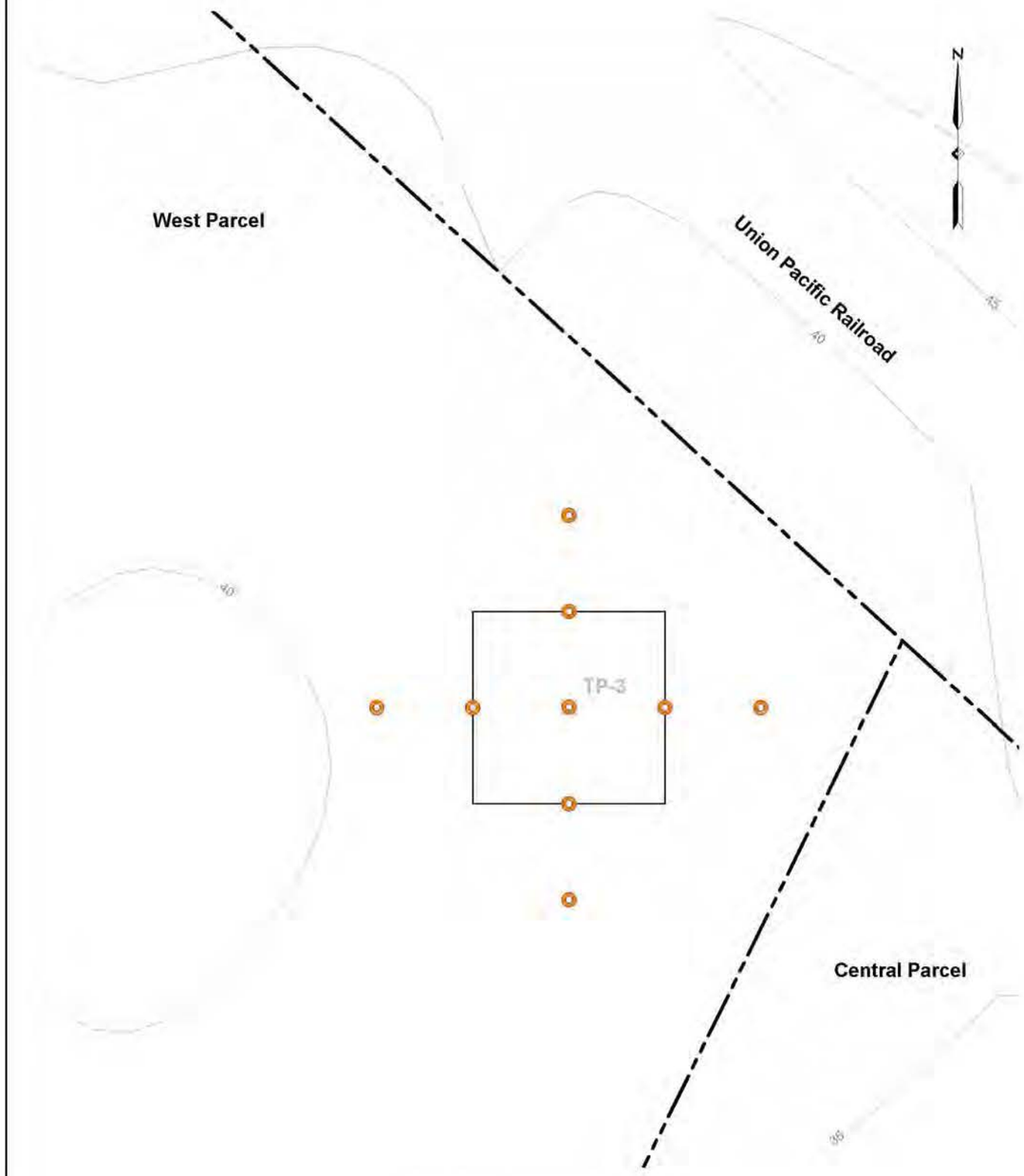
Project Number	1056-03	Figure
February 2014		2



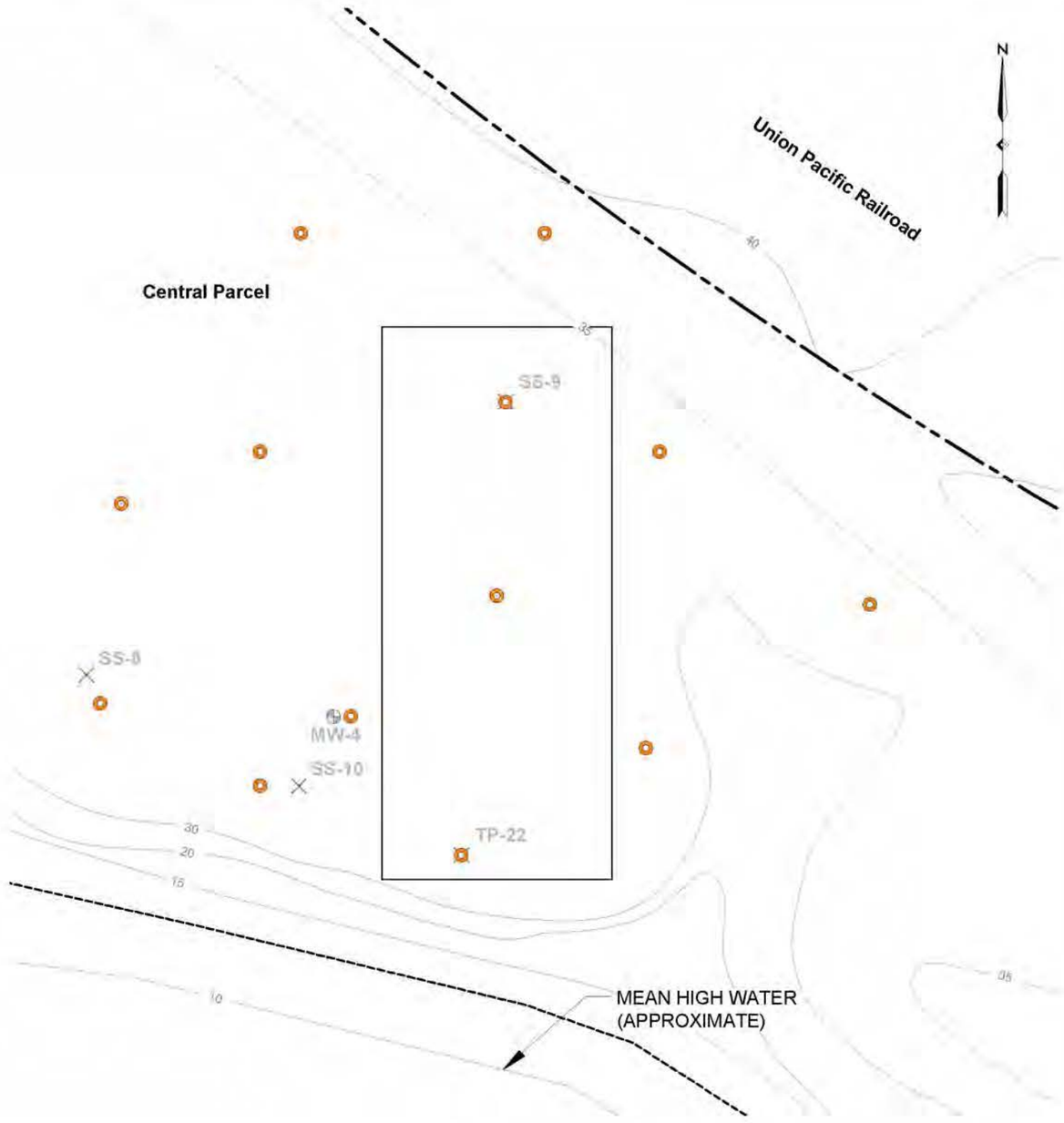
Facility Vicinity Plan

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1056-03	Figure 3
	February 2013		



AREA 1 EXCAVATION



AREA 2 EXCAVATION

Legend:

- Proposed Surface Soil Sample Location

0 30 60

Scale in Feet

Sampling Plan - Area 1 and Area 2

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1056-03	Figure 4
	February 2013		

Union Pacific Railroad

N

Central Parcel

SS-15

SS-14

MW-5

WC-SSS-2b

WC-SSS-2a

WC-SSS

TP-25

TP-27

TP-26

TP-7

WC-SSR

35

35

30

25

20

15

10

Willamette River

MEAN HIGH WATER
(APPROXIMATE)

Legend:

- Proposed Surface Soil Sample Location

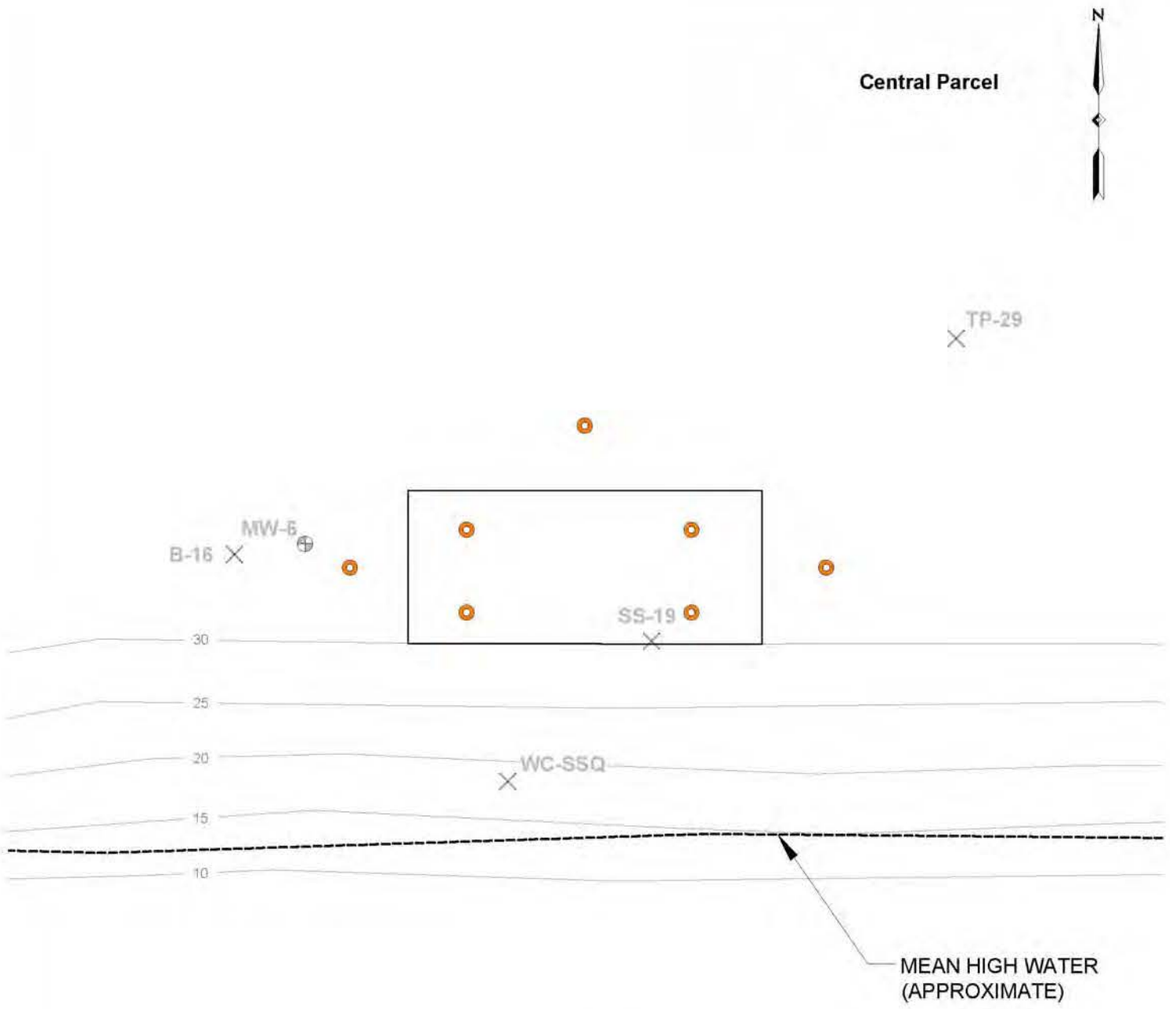
0 30 60

Scale in Feet

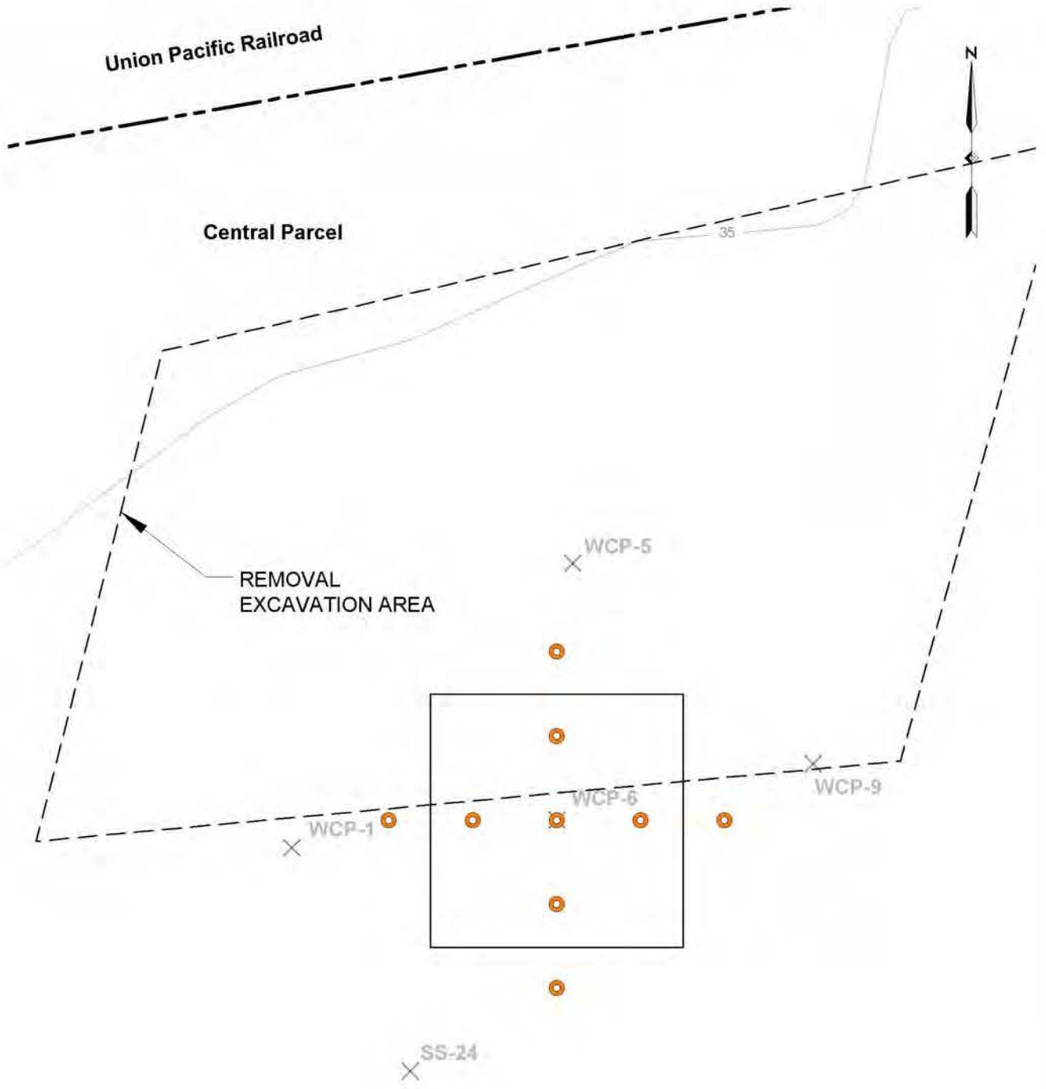
Sampling Plan - Area 3

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1056-03	Figure 5
	February 2013		



AREA 4 EXCAVATION



AREA 5 EXCAVATION

Legend:

- Proposed Surface Soil Sample Location

0 30 60

Scale in Feet

Sampling Plan - Area 4 and Area 5

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

APEX Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1056-03	Figure
February 2013		6

Union Pacific Railroad

N

WCP-7

WCP-8

WCP-3

WCP-9

SS-26

TP-34

SS-30

SS-29

SS-27

Central Parcel

East Parcel

Legend:

- Proposed Surface Soil Sample Location

0 30 60

Scale in Feet

Sampling Plan - Area 6

Proposed Soil Sampling - Removal Design
Willamette Cove Upland Facility
Portland, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1056-03	Figure 7
	February 2013		

Attachment A

Standard Operating Procedure 2.2

1. PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) describes the methods used for obtaining surface soil samples for physical and/or chemical analysis. For purposes of this SOP, surface soil (including shallow subsurface soil) is loosely defined as soil that is present within 3 feet of the ground surface at the time of sampling. Various types of sampling equipment are used to collect surface soil samples including spoons, scoops, trowels, shovels, and hand augers.

2. EQUIPMENT AND MATERIALS

The following materials are necessary for this procedure:

- Spoons, scoops, trowels, shovels, and/or hand augers. Stainless steel is preferred.
- Stainless steel bowls
- Laboratory-supplied sample containers
- Field documentation materials
- Decontamination materials
- Personal protective equipment (as required by Health and Safety Plan)

3. METHODOLOGY

Project-specific requirements will generally dictate the preferred type of sampling equipment used at a particular site. The following parameters should be considered: sampling depth, soil density, soil moisture, use of analyses (e.g., chemical versus physical testing), type of analyses (e.g., volatile versus non-volatile). Analytical testing requirements will indicate sample volume requirements that also will influence the selection of the appropriate type of sampling tool. The project sampling plan should define the specific requirements for collection of surface soil samples at a particular site.

Collection of Samples

- **Volatile Analyses.** Surface soil sampling for volatile organics analysis (VOA) is different than other routine physical or chemical testing because of the potential loss of volatiles during sampling. To limit volatile loss, the soil sample must be obtained as quickly and as directly as possible. If a VOA sample is to collected as part of a multiple analyte sample, the VOA sample portion will be obtained first. The VOA sample should be obtained from a discrete portion of the entire collected sample and should not be composited or homogenized. Sample bottles should be filled to capacity, with no headspace. Specific procedures for collecting VOA samples using the EPA Method 5035 are discussed in SOP 2-7.
- **Other Analyses.** Once the targeted sample interval has been collected, the soil sample will be thoroughly homogenized in a stainless steel bowl prior to bottling. Sample homogenizing is accomplished by manually mixing the entire soil sample in the stainless steel bowl with the sampling tool or with a clean teaspoon or spatula until a uniform mixture is achieved. If packing of the samples into the bottles is necessary, a clean stainless steel teaspoon or spatula may be used.

General Sampling Procedure:

- Decontaminate sampling equipment in accordance with the Sampling and Analysis Plan (SAP) before and after each individual soil sample.
- Remove surface debris that blocks access to the actual soil surface or loosen dense surface soils, such as those encountered in heavy traffic areas. If sampling equipment is used to remove surface debris,

the equipment should be decontaminated prior to sampling to reduce the potential for sample interferences.

- When using a hand auger, push and rotate downward until the auger becomes filled with soil. Usually a 6- to 12-inch long core of soil is obtained each time the auger is inserted. Once filled, remove the auger from the ground and empty into a stainless steel bowl. If a VOA sample is required, the sample should be taken directly from the auger using a teaspoon or spatula and/or directly filling the sample container from the auger. Repeat the augering process until the desired sample interval has been augered and placed into the stainless steel bowl.

Backfilling Sample Locations:

Backfill in accordance with federal and state regulations including OAR 690-240 (e.g., bentonite requirements). The soils from the excavation will be used as backfill unless project-specific or state requirements include the use of clean backfill material.